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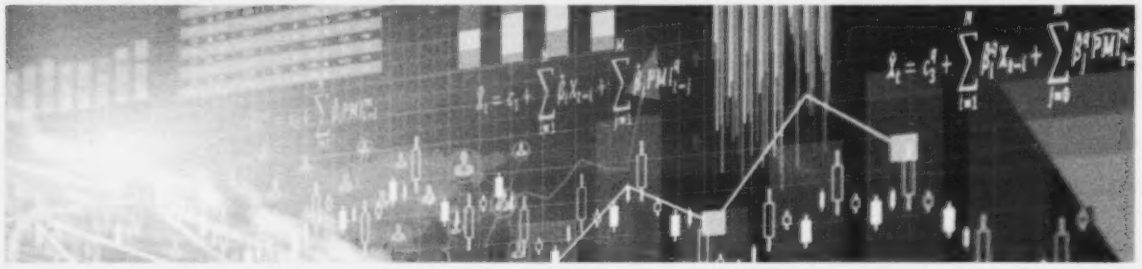
Financial Inclusion—What's it Worth?



by Miguel Ampudia and Michael Ehrmann

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Financial Inclusion—What's it Worth?

by

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Abstract

The paper studies the determinants of being unbanked in the euro area and the United States as well as the effects of being unbanked on wealth accumulation. Based on household-level data from *The Eurosystem Household Finance and Consumption Survey* and the U.S. *Survey of Consumer Finances*, it first documents that there are, respectively, 3.6 per cent and 7.5 per cent of unbanked households in the two economies. Low-income households, unemployed households and those with a poor education are the most likely to be affected, remarkably more so in the United States than in the euro area. At the same time, there is a role for government policies in fostering financial inclusion. Using a propensity score matching approach to estimate the effects of being unbanked, we found that banked households report substantially higher net wealth than their unbanked counterparts, with a gap of around €74,000 for the euro area and $42,000 for the United States. A potential reason for this wealth difference is that banked households are considerably more likely to accumulate wealth through ownership of their principal residence.

JEL classification: G21, G28, D14
Bank classification: Econometric and statistical methods; Financial services; Financial system regulation and policies; Housing

Résumé

Cet article examine les déterminants de la non-bancarisation en zone euro et aux États-Unis ainsi que ses effets sur l'accumulation de la richesse. À partir de données sur les ménages tirées de l'enquête sur les finances et la consommation des ménages au sein de l'Eurosystème et de l'enquête menée par la Réserve fédérale américaine sur les finances des consommateurs, il établit d'abord que la proportion des ménages non bancarisés dans ces deux économies atteint 3,6 % et 7,5 % respectivement. Les ménages à faible revenu, les ménages frappés par le chômage et les ménages peu scolarisés sont les plus susceptibles d'être touchés, et c'est particulièrement le cas aux États-Unis. Par ailleurs, les politiques gouvernementales ont un rôle à jouer pour favoriser l'inclusion financière. Recourant à une méthode d'appariement par score de propension pour estimer les effets de la non-bancarisation, les auteurs constatent que les ménages bancarisés déclarent une richesse nette sensiblement supérieure à leurs homologues non bancarisés, l'écart représentant environ 74 000 € pour la zone euro et quelque 42 000 $ pour les États-Unis.

Cet écart pourrait notamment tenir au fait que les ménages bancarisés sont beaucoup plus susceptibles d'accumuler de la richesse en devenant propriétaires de leur résidence principale.

Classification JEL : G21, G28, D14
Classification de la Banque : Méthodes économétriques et statistiques; Services financiers; Réglementation et politiques relatives au système financier; Logement

Non-technical summary

Household access to financial services, a long-standing topic in policy debates in emerging markets, has also been identified as important in advanced economies, especially after the 2008 financial crisis, which even saw many upper-income households become unbanked. Without access to saving and borrowing instruments through formal financial institutions, these households are prone to being at a disadvantage economically because they cannot smooth consumption as easily and face more difficulties accumulating wealth.

This paper provides new evidence about the importance of financial inclusion in advanced economies, about the determinants of being unbanked and about its effects. It uses data on household finances for 14 euro area countries, taken from the 2009–10 *Eurosystem Household Finance and Consumption Survey* (HFCS) as well as comparable data from the 2010 U.S. *Survey of Consumer Finances* (SCF). While the share of unbanked households in the euro area is, at 3.6 per cent, substantially below the share in the United States (7.5 per cent), there is substantial variation across countries and over different household groups. Like in the United States, it is particularly the low-income and the poorly educated households that remain outside the financial system; however, the more disadvantaged households in the United States are substantially more likely to be unbanked than their counterparts in the euro area.

The cross-country dimension of the data set allows further insights into the determinants of being unbanked with regard to the role of supply factors and the effects of policies that are put in place to promote financial inclusion. In line with earlier studies, we find that the accessibility of financial institutions (i.e., the supply side) matters as do government policies that encourage ownership of bank accounts. However, in contrast to the earlier results, we do not find that the likelihood of being unbanked falls if the government requires its banks to offer a low-fee account to low-income clients.

The last part of the paper provides estimates of the effects of being unbanked. We find that banked households report substantially higher net wealth than their unbanked counterparts, with a gap of around €74,000 in the euro area and $42,000 in the United States. One reason for this wealth difference is that banked households are considerably more likely to accumulate wealth through ownership of their principal residence.

These results provide support for the notion that financial inclusion is an important issue in advanced economies as well since being unbanked remains a reality for a non-trivial number of households in both the euro area and the United States, who are put at a considerable economic disadvantage.

1. Introduction

Household access to financial services, a long-standing topic in policy debates in emerging markets (e.g., World Bank 2008, World Bank 2014), has also been identified as important in advanced economies. Demirgüç-Kunt et al. (2015) reveals that 6 per cent of adults in high-income economies remained unbanked in 2014. In December 2015, the Obama administration launched an initiative to boost access to banking in the United States, an issue that became more pressing after the 2008 financial crisis, which even saw many upper-income households becoming unbanked.[1]

Without access to saving and borrowing instruments through formal financial institutions, these households are prone to being at a disadvantage economically because they cannot smooth consumption as easily and face more difficulties in accumulating wealth. While there are workarounds, these tend to be much less efficient and, in particular, much more costly. Fellowes and Mabanta (2008) provide evidence that the unbanked in the United States pay around $40,000 higher fees for financial services (such as cashing cheques) over an adult working life, additional expenditures that cannot be used for consumption, debt repayment or wealth accumulation.

This paper provides new evidence about the importance of financial inclusion in advanced economies, about the determinants of being unbanked and about its effects. It uses data on household finances for 14 euro area countries, taken from the 2009–10 *Eurosystem Household Finance and Consumption Survey* (HFCS) as well as comparable data from the 2010 U.S. *Survey of Consumer Finances* (SCF). While the share of unbanked households in the euro area is, at 3.6 per cent, substantially below the share in the United States (7.5 per cent), there is substantial variation across countries and over different household groups. Like in the United States, it is particularly the low-income and the poorly educated households that remain outside the financial system; however, the more disadvantaged households in the United States are substantially more likely to be unbanked than their counterparts in the euro area.

The cross-country dimension of the data set allows further insights into the determinants of being unbanked with regard to the role of supply factors and the effects of policies that are put in place to promote financial inclusion. Our results are consistent with those of the large cross-country study by Demirgüç-Kunt and Klapper (2013): We show that the accessibility of financial institutions (i.e., the supply side) matters because the probability that a household is unbanked falls with the density of automated teller machines (ATMs) in a given country. Government initiatives that encourage ownership of bank accounts also appear to be effective; however, in contrast to the earlier results, we do not find that the likelihood of being unbanked falls if the government requires its banks to offer a low-fee account to low-income clients.

The last part of the paper employs a propensity score matching approach to provide estimates of the effects of being unbanked. We find that banked households report substantially higher net wealth than their unbanked counterparts, with a gap of around €74,000 in the euro area and $42,000 in the United States. One reason for this wealth difference is that banked households are considerably more likely to accumulate wealth through ownership of their principal residence.

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[1] See http://blogs.wsj.com/economics/2015/12/02/obama-administration-targets-unbanked-households-in-new-initiative/?mod=djemRTE_h and http://www.wsj.com/news/articles/SB10000872396390444443504577601283142758856

These results provide support for the notion that financial inclusion is an important issue in advanced economies as well. While they show that being unbanked remains a reality for a non-trivial number of households in the euro area and the United States, and that this puts these households at a considerable economic disadvantage, our findings also show that public policies, such as paying transfers through bank accounts, can mitigate the issue to some extent.

The paper is organized as follows. Section 2 provides an overview of the related literature. Section 3 discusses the methodology and data used in the analysis. Subsequently, we report our results with regard to the determinants of being unbanked in Section 4, before we move on to study the likely effects in Section 5. A discussion of the conclusions and implications follows in Section 6.

2. Related Literature

This paper relates to three main strands of the literature: (i) the measurement and identification of financial inclusion, (ii) its determinants and (iii) its effects.

With respect to *measurement and identification*, the World Bank has been leading an impressive effort to assemble data about the extent to which households are unbanked globally. Demirgüç-Kunt and Klapper (2013) provide data for 148 countries and show that half of all adults globally did not have an account at a formal financial institution in 2011, with the majority of these living in developing countries. A more recent update (Demirgüç-Kunt et al. 2015) reports impressive progress, in the sense that the share of the unbanked stood at a considerably lower 38 per cent in 2014, with substantial reductions in a number of developing countries.

These data allow studying the *determinants of being unbanked* across countries, including the effects of public policies. Beck, Demirgüç-Kunt and Martinez Perez (2007) stress the importance of the quality of the institutional environment as a positive factor and the cost of enforcing contracts and the degree of government ownership of banks as a negative factor. Demirgüç-Kunt et al. (2015) identify the important role of governments in fostering financial inclusion, e.g., by shifting the payment of government transfers from cash into accounts, and Allen et al. (2012) report that the existence of low-cost accounts as well as a reduction in documentation requirements when opening bank accounts help enabling the access to financial services. Another important factor that they identify is greater proximity to financial intermediaries, which could also be in line with Honohan's (2008) result that mobile phone penetration is relevant. More generally, levels of economic development and financial inclusion are highly correlated (Sarma and Pais 2011), suggesting that for more developed economies, we should generally expect fewer unbanked households.

Beyond these cross-country studies, variations over time in individual countries have also been used to identify the determinants of being unbanked. For instance, Burgess and Pande (2005) identify a state-led expansion of the banking sector in India as having led to greater financial inclusion of the rural poor. Aportela (1999) shows that the exogenous expansion of a Mexican savings institute, targeted to low-income people, increased financial inclusion and raised the savings rate of affected households. An alternative identification scheme is employed by Osili and Paulson (2008), who find that immigrants in the United States from countries with more effective institutions are more likely than other immigrants to have a relationship with a bank. Based on the same identification approach, Rhine and Greene

(2006) conclude that income, wealth and education are important determinants of being unbanked.

The dynamics of becoming unbanked in the United States has been analyzed by Rhine and Greene (2013), who find that families are significantly more likely to become unbanked when there is a decline in family income, loss of employment, or loss of health insurance coverage. In a related analysis, Campbell, Martinez-Jerez and Tufano (2012) show that involuntary bank account closures are more frequent in U.S. states with lower wealth, lower education and higher unemployment. In addition, the paper reports that access to payday lending leads to higher rates of involuntary bank account closures, suggesting that the availability of "workarounds" is also a factor that determines the degree to which households are unbanked.

The third strand of the literature studies the *effects of financial inclusion*. Even though there are workarounds for financially excluded households, like using friends and family as a source of borrowing (Banerjee and Duflo 2007), having access to financial instruments opens more ample possibilities for smoothing consumption and investment in physical and human capital, thereby improving economic welfare, reducing income inequality and fostering economic growth (World Bank 2008).[2]

Such positive effects have been shown in several studies that exploit randomized controlled experiments (Ashraf, Karlin and Yin 2006; Dupas and Robinson 2011, 2013). Honohan and King (2012) also identified a positive effect on income using micro data for households in sub-Saharan African.

With most of the evidence relating to emerging markets, there are a few studies dealing with advanced economies. Bank deregulation in the United States, for instance, has been used to identify the effects of greater financial inclusion. Beck, Levine and Levkov (2010) find that this has led to more inclusive growth, boosting the relatively low incomes in particular, thereby narrowing the income distribution. Célerier and Matray (2014) also document a substantial effect of banking deregulation on the share of unbanked households, along with an increase in savings rates. These studies, as well as Washington (2006), point to supply-side factors, as important determinants of being unbanked, whereas other contributions, like Bertrand, Mullainathan and Shar (2004), have highlighted the relevance of the demand side. In that regard, OECD (2013) stresses the importance of financial literacy—higher levels of financial knowledge are correlated with larger awareness of financial products, which is argued to be an important step in removing demand-side barriers to financial inclusion.

3. Data and Empirical Methodology

In this section, we outline our estimation methodology and the data we used for our empirical analysis.

3.1 Data

To conduct our analysis we use data from the HFCS and its U.S. equivalent, the SCF. The

[2] Mehrotra and Yetman (2014) consider the effects of financial inclusion on monetary policy. They argue that with greater financial inclusion, households can more easily smooth their consumption, which in turn makes output volatility less costly and enables central banks to focus more on maintaining price stability.

HFCS provides ex ante comparable data for 15 euro area countries.[3] We discard the data for Finland (where households were not asked about their ownership of financial accounts, but a 100 per cent participation rate was assumed). Effectively, our data cover therefore more than 50,000 households in Austria, Belgium, Cyprus, France, Germany, Greece, Italy, Luxembourg, Malta, the Netherlands, Slovakia, Slovenia, Spain and Portugal.

The HFCS contains information regarding socio-demographic variables, assets, liabilities, income and consumption for a sample of households that is representative both at the national and the euro area levels. A set of population weights is provided to ensure the representativeness of the sample. Our calculations use these population weights.

Another important feature of the HFCS is that missing observations for all the variables that are necessary to construct wealth and income aggregates (i.e., questions that were not answered by the respondent households) are imputed five times—an issue that we consider when assessing the statistical significance of our estimates. The HFCS data refer to the year 2008 in Spain, 2009 in Finland, Greece and the Netherlands, and 2010 in all remaining countries.

For our estimates for the United States, we rely on the SCF.[4] We use the 2010 wave to be as close as possible to the time of the HFCS. The SCF also provides population weights and five imputations, allowing us to treat both surveys in the same way. For the United States, our sample contains nearly 6,500 households.

Table 1 here

While there are many different notions of financial inclusion, covering for instance the range of financial products that individuals can access, we will examine whether or not households are unbanked. We consider them to be unbanked if they hold neither chequing accounts nor savings accounts with financial institutions. Note that this definition does not specify why the households are unbanked—they could be voluntarily excluded (because they do not require financial services or because they somehow have an indirect access) or be involuntarily excluded (because they lack access to the financial system).

Table 1 shows the share of unbanked households according to this definition. There are considerably fewer such households in the euro area than in the United States: 3.6 per cent versus 7.5 per cent. However, these numbers mask a substantial heterogeneity in the euro area, where we find countries with less than 1 per cent unbanked households (Austria, France and Germany), but as well as some with around 10 per cent (Italy and Slovakia). Greece is the extreme, with more than 25 per cent of households reporting not having any financial accounts.

That number might seem implausible, and it cannot be excluded that there is some underreporting of account ownership. At the same time, there is anecdotal evidence that households in more distant areas in Greece tend to keep cash at home, rather than having

[3] For more details on the survey, see http://www.ecb.europa.eu/home/html/researcher_hfcn.en.html. The results from the first wave are described in detail in Household Finance and Consumption Network (2013a), and the most relevant methodological features of the survey are discussed in Household Finance and Consumption Network (2013b).

[4] This data set has been used in Hogarth, Anguelov and Lee (2004) to identify the determinants of being unbanked. The number of unbanked households in this survey are in line with those reported by the Federal Insurance Deposit Corporation (FDIC), 7.6 per cent in 2009 and 8.2 per cent in 2011 (FDIC 2014).

bank deposits, because it is apparently perceived to be more convenient and there is little fear about theft. Still, it is useful to validate these data using the World Bank data underlying Demirgüç-Kunt and Klapper (2013). The World Bank data generally show larger shares of unbanked households than the HFCS data, which could come from the fact that the HFCS measures access per household, whereas the World Bank data measure individual adults (and while an individual might not have access to an account herself, she might do so through the household). The figures for Greece are surprisingly close across the two data sets, with a share of 22 per cent unbanked adults resulting in the 2011 World Bank data. Accordingly, we trust that the data for Greece are not completely inaccurate, and we are comforted by the fact that excluding Greece from the analysis does not alter our results qualitatively (see Subsection 5.3 on robustness checks).

Table 1 shows that income is an important factor to consider when looking at the distribution of unbanked households across different types of household characteristics. This is particularly true in the United States, where only 0.2 per cent of households in the highest income quintile are unbanked in contrast to 20 per cent in the lowest quintile. The same also holds true in the euro area where we find that high-income households are substantially more likely to be banked than low-income households in nearly all individual countries (the exception being the Netherlands).

At the same time, in some countries quite a few high-income households are unbanked. Unfortunately, it is difficult to provide clear reasons for this pattern, but we would like to note that at times high-income households also become financially excluded following an inability to pay, and that households might be voluntarily unbanked, provided they have workarounds. For instance, in many countries private operators can offer financial services at post offices (see Consultative Group to Assist the Poor [CGAP] 2009), and family ties might also offer an alternative.

The working status of the survey respondent is also relevant[5]—unemployed households and those categorized as "other not working" (i.e., students, permanently disabled, doing compulsory military service or equivalent social service, those fulfilling domestic tasks and others not working for pay) are unbanked more often. Finally, education also plays a role: households with a less educated reference person having a much higher likelihood of being unbanked.

Of course, all of these statistics are unconditional, and the various characteristics we have examined are bound to be correlated. We therefore explain the determinants of being unbanked in a more formal setting that conditions simultaneously on a number of factors.

3.2 Estimating the determinants of being unbanked

To estimate the determinants of being unbanked, we define a variable that is equal to 1 if a household does not have a financial account and equal to 0 otherwise. This binary variable is analyzed using a probit model, which we formulate for the euro area data as

$$\Pr(\mathbf{U}_i = 1 \mid x) = \Pr(\mathbf{U}_i^* > 0 \mid x) = \Phi(x) \tag{1}$$

$$\mathbf{U}_i^* = \beta_0^{EA} + \beta_1^{EA} x_i + \beta_2^{EA} x_c + \varepsilon_i \tag{2a}$$

[5] For the HFCS data, this is the person who has been identified as the "financially knowledgeable person" in the household; for the SCF, this is the male in a couple or the older person in a same-sex couple.

This model implies that the probability that household i is unbanked is a function of various determinants x, which affect a latent variable $\mathbf{U}_i^*$. The determinants include the following household characteristics x_i: Age, age^2, the position of the household in the national income distribution, working status, education, marital status, the number of household members and gender.[6]

In addition, we include several country-specific determinants x_c: whether or not the government requires its banks to offer a low-fee account to low-income clients, whether or not the government encourages recipients of transfer payments to open bank accounts, and the density of ATMs in a given country (measured as the number of ATMs per 1000 km^2). These three variables test for the effect of government policies to foster financial inclusion and the supply side of financial services. The data are sourced from CGAP (2009) and the International Monetary Fund's (IMF) *Financial Access Survey* (IMF 2012).

As an alternative specification, we exclude the country-specific determinants and instead include a set of country-fixed effects. These control for factors that affect all households in a given country alike, but might differ across countries. Accordingly, they allow us to test to what extent our previous specification has accurately captured country effects. In this specification, the latent variable is modelled as

$$\mathbf{U}_i^* = \beta_0^{EA} + \beta_1^{EA} x_i + \mu_c + \varepsilon_i. \tag{2b}$$

Finally, since we do not pool the HFCS and the SCF data (both surveys have their own sample design and population weights), we run a separate estimation for the U.S. data with the latent variable described as

$$\mathbf{U}_i^* = \beta_0^{US} + \beta_1^{US} x_i + \varepsilon_i. \tag{2c}$$

In the U.S. estimation, we also control for ethnicity of the reference person, a variable that is not available for the HFCS data.

When estimating the model, we use weights to account for the fact that an individual household does not always represent the same fraction of the overall population. Our weights readjust each observation to reflect its relative importance for the euro area (or the United States) as a whole. In so doing, we follow Faiella (2010) and Magee, Robb and Burbidge (1998), who recommend the use of weights for two similar surveys, namely the Italian *Survey of Household Income and Wealth* and the Canadian *Survey of Consumer Finances*. These authors argue that in surveys with complex survey design, the use of weights protects against the omission of relevant information, which otherwise would have to be modelled explicitly by incorporating all available geographic and operational variables that determine sampling rates.

For the estimations with the euro area data, we cluster the standard errors by country.

[6] In more detail, these variables are as follows: the position of the household in the national income distribution (as measured by income quintile dummies, with the lowest group serving as benchmark group), working status (self-employed, unemployed, retired, other inactive, with the employed serving as the benchmark), education (completed secondary education, completed tertiary education, with primary education serving as benchmark group), marital status (married, divorced, or single as benchmark group), the number of household members, and gender (with female serving as the benchmark).

3.3 Estimating the effects of being unbanked

Table 2 provides summary statistics on our variables of interest, separately for banked and unbanked households. Mean net wealth of the unbanked households in the euro area amounts to 30 per cent of the mean net wealth of the banked households; in the United States, the ratio stands at 5 per cent. Ownership of the household principal residence also differs sharply, with a gap of 8 percentage points in the euro area and nearly 50 percentage points in the United States. Although these differences are enormous, it is important to keep in mind that unbanked households have very different characteristics than banked households.

Table 2 here

As we are interested in estimating the effects of being unbanked, we need to ensure that our estimates are not driven by the different composition of the two groups. It is therefore crucial to appropriately define the comparator group. We will do this using a propensity score matching method.

If it is not possible to run randomized experiments, this methodology is often applied to estimate the effect of a "treatment" (e.g., a medical treatment or being exposed to a certain policy measure; in our case, the treatment is being unbanked) on particular outcomes (like health, the desired effect of a policy initiative or, in our case, wealth accumulation). In the absence of a random allocation of households to the treatment group, the methodology compares households that are as similar as possible along a large number of dimensions (e.g., income or education), such that it is reasonable to argue that they effectively only differ according to their treatment status, i.e., whether they are banked or unbanked. That way, differences in the relevant outcome between the matched households and the treated households can be attributed to the effect of being unbanked. As shown by Dehejia and Wahba (2002), this method succeeds in alleviating the bias that results from systematic differences between the treated and comparison units.

Propensity score matching has been used in related applications that study wealth accumulation of households or household finances more generally. Loibl et al. (2010) look at the effects of participation in savings programs on household savings, Morse (2011) tests whether access to payday loans affects the likelihood of financial stress, and Seligman and Bose (2012) analyze whether employer-sponsored retirement savings plans change household wealth accumulation.

DuGoff, Schuler and Stuart (2014) have developed a propensity score estimation strategy for complex surveys. We follow this strategy, given that the HFCS and the SCF both oversample wealthy households and therefore require the use of population weights in estimations. The strategy implies that we include the population weight as a covariate when estimating a propensity score for each observation in our sample. The propensity score is the probability of being unbanked given a particular value for the observed characteristics x_i: $\Pr(\mathbf{U}_i = 1 \mid x_i) = \Phi(x_i)$, where x_i is defined as above but now also contains the population weights.

We match each unbanked household with the five closest banked households, provided that the distance between their propensity scores is smaller than a particular threshold, which we set to be 0.01, or 1 per cent, in our benchmark model. This matching method is usually

called nearest neighbors matching with replacement and with a maximum distance (the caliper). This particular method is chosen because it provides a sample that is balanced across all covariates. All our results are robust to increasing and decreasing the number of neighbors matched and the size of the caliper (see Subsection 5.3).

Once the matching is done, we calculate the treatment effect by comparing the outcome variable between all the "treated" within the common support (i.e., all the unbanked households whose propensity score lies within the range of the propensity score distribution for the banked) and all the matched counterparts. Doing so, we follow DuGoff, Schuler and Stuart (2014) and apply an adjusted weight that is given by the product between the population weight and the matching weight.

Our main outcome of interest is the household's net wealth (and its decomposition). We also study whether being unbanked has any effects on household ownership of its principal residence. A clear concern related to these outcomes, and most prominently for net wealth, is a possible endogeneity of the household's decision to be unbanked. This will occur if having a bank account is related to some attitude or behavior of the household (such as thriftiness or willingness to save) that is in turn also related to its net wealth. If we cannot control for these characteristics when constructing our matching samples and in our regression, our estimates could be biased. As mentioned in the literature survey, the earlier related studies have used in particular two identification strategies to mitigate these concerns—either exogenous events that allow comparing the situation before and after the event (such as Ashraf, Karlan and Yin 2006; Dupas and Robinson 2011, 2013) or exogenous variation across households like the background of immigrants in the United States (Osili and Paulson 2008, Rhine and Greene 2006).

Given the non-experimental cross-sectional nature of our data, the available approach to tackle this issue is trying to control for as many household characteristics as possible. For the United States, apart from using socio-demographic and economic variables, we can control for a series of attitudinal/behavioral variables that can proxy for characteristics of the type mentioned before. In particular, we control for the extent to which households shop around when looking for financial investments, whether they make use of specialized software to help them with their financial decisions, whether the household is saving (or has saved) for a future major expense, the ability of the household to get money from friends and relatives in case of an emergency, the household's saving habits, the reasons for saving and whether the household saved any money last year. The inclusion of these variables should assuage concerns about endogeneity. Because no comparable variables are available for all the countries in the European data, we cannot include them in our model. However, we find that the results for the United States are qualitatively unchanged whether or not these variables are included.

4. Determinants of Being Unbanked

Let us now look into the determinants of being unbanked. A large literature has already studied this question, so we see our results as a validation of the earlier findings using new data. Table 3 provides three sets of results, according to equations (2a) to (2c). All coefficients are average marginal effects, for an easier interpretation of the findings.

Table 3 here

In line with the earlier results, we confirm that income is a particularly important factor for being unbanked. In the euro area, households in the top income quintile are around 7 percentage points more likely to have financial accounts than those in the lowest income group. For the United States, the gradient is substantially steeper – here, the income-rich are 16 percentage points more likely to be banked than the income-poor. This is consistent with the discussion of the summary statistics in Table 1, but it is important to note that the current results condition on other determinants.

Also the findings regarding working status in Table 1 are confirmed in Table 3: if the reference person is unemployed, a euro area household is 1 percentage point more likely to be unbanked than their employed counterparts. In the United States, this effect is stronger, at 4 percentage points. For the "other inactive" households (i.e., students, persons with permanent disabilities, participants doing compulsory military service or equivalent social service, those fulfilling domestic tasks and other not working for pay), we find a difference of 1 percentage point in the euro area and a drastic difference of 17 percentage points in the United States.

A third important factor is education. Completion of high school or even college is associated with a higher prevalence of having an account—once again, much more so in the United States. The other household characteristics are either not significant in both the euro area and the United States or they appear to be important in only one of the two cases. For the United States, we can also analyze the effect of ethnicity, which shows that white households are 5 percentage points less likely to be unbanked.

Moving on to the country-specific variables, our results are consistent with those of the large cross-country panel study by Demirgüç-Kunt and Klapper (2013).[7] The likelihood that a household is unbanked falls as the density of ATMs in a given country increases, suggesting that the supply of bank services matters (this effect is only significant at the 10 per cent level, however). Government policies also seem to be at play: in countries where the government encourages recipients of transfer payments to open bank accounts, 6 percentage points more households report to be banked. In contrast, and differently than earlier studies, we do not find that the likelihood of being unbanked falls if the government requires its banks to offer a low-fee account.

The inclusion of country-specific variables is important. If we were to exclude them entirely, i.e., base the estimates only on household characteristics, we would obtain a substantially smaller pseudo-R^2 of 0.13. Comparing the results with those of a model with country-fixed effects (reported as the second set of results in Table 2), we see that the pseudo-R^2 increases only somewhat, suggesting that our variables have captured a large part of the country-specific variation.[8] The country-fixed effects themselves can now be interpreted in a conditional manner (in contrast to the unconditional statistics reported in Table 1). Even when controlling for household characteristics, the countries with highest share of unbanked households are Cyprus, Greece and Slovakia. The country-fixed effects report the difference relative to Germany. The only countries with relatively fewer unbanked households than Germany are Austria and France, whereas the difference is not statistically significant for Spain.

[7] We also included other variables, such as gross domestic product (GDP) per capita, and additional variables from CGAP (2009), namely one variable that captures disclosure requirements when opening an account, an index that captures how the practices of financial institutions get monitored, an index on how issues arising from the monitoring get enforced, the existence of savings schemes and the existence of tax incentives to participate in savings schemes. None of these turned out to be important.

[8] The number of observations is different in the two cases because the country-specific variables in the first specification are not available for Cyprus and Malta.

These results are broadly in line with those of the earlier literature. Household characteristics like income, working status and education are relevant determinants, with the more disadvantaged households being more likely to be unbanked. In addition, supply factors are important, and there is a role for government policies in fostering financial inclusion.

What is remarkable, though, is the difference across the two economies, with relatively more disadvantaged households in the United States being dramatically more likely to be unbanked than their counterparts in the euro area. After having studied the determinants, we will now turn to analyzing the effects of being unbanked.

5. Effects of Being Unbanked

As described in Section 3, we first need to match the unbanked with a set of banked households to study the effects of being unbanked. Table 4 reports the main summary statistics of our matching exercise.[9]

Table 4 here

For the euro area, our sample consists of 2,491 unbanked households and nearly all of them remain in the matched sample. These households are matched with 7,291 banked households. For the United States, the starting sample of unbanked households is smaller, reflecting the overall smaller sample size of the U.S. data. Of the 463 unbanked households, 449 remain in the matched sample, together with 1,133 banked households. The third column provides the matching results for the U.S. sample that has an extended set of covariates. As matching along more dimensions makes it harder to find comparable households, the resulting sample of matched households is somewhat smaller, leaving us with 439 unbanked and 1,077 banked households.

Table 4 also contains information on the quality of the matching. First, it shows the pseudo R^2 that results from a probit estimation of the treatment status on all covariates, along with a p-value for the likelihood ratio tests that all covariates are jointly insignificant. These statistics are given for the full sample before matching and for the sample of matched (banked and unbanked) households.

For the full samples, we obtain pseudo R^2s in the order of 0.3, and the joint insignificance of the covariates is clearly rejected. This suggests that the covariates are important determinants of households' propensity to be unbanked. If the matching has been successful, however, this should no longer be the case for the matched sample (as here, the households should be very similar along all the covariates and only differ with regard to their banking status). This does indeed seem to be the case: the pseudo R^2s are very close to zero, and the joint insignificance of the regressors cannot be rejected.

Another test for the validity of the matching procedure is given by the median and mean standardized bias statistics in Table 4. To obtain these, we calculate the "bias" for each

[9] Results are shown for the sample of households for which we observe the main dependent variable, net wealth. For some other dependent variables, there are some missing observations, leading to slightly different results of the matching procedure. While these are not shown for brevity, it is important to note that the matching procedures successfully eliminate differences between the matched households along the covariates in all cases.

covariate, i.e., the difference in the mean of each covariate between the unbanked and the banked households (expressed as a percentage of the square root of the average of the sample variances in the treated and non-treated groups, using the formulae from Rosenbaum and Rubin [1985]). To get a single summary statistic, we subsequently calculate the median/mean of the biases. It is apparent that the difference between the banked and the unbanked is substantial in the unmatched sample (mean bias around 20 per cent in the euro area and around 40 per cent in the United States), whereas it is very small (in the order of 1 per cent to 2 per cent) in the matched sample.

Based on these statistics, we are confident that the matched sample allows estimating the effect of being unbanked on a set of economic outcomes. We will turn to this next.

5.1 Wealth accumulation

Following the matching of treated and untreated (i.e., unbanked and banked households), we can now move on to estimating the treatment effect. We first study the effects of being unbanked on wealth accumulation. Table 5 shows the corresponding results.

Table 5 here

In the euro area, unbanked households have, on average, around €74,000 lower net wealth than similar banked households. For the United States, when controlling for the same household characteristics, the difference in net wealth between the two groups is around $42,000. As we discussed in Section 3, there might be concerns about a bias in these estimates resulting from omitted variables. When adding a set of control variables to address this issue (see Subsection 3.3), the difference in net wealth between the two groups is reduced but remains statistically and economically significant.

The differences in net wealth between the banked and the unbanked are non-trivial, and we therefore want to understand the reasons for this gap. A first step in this direction is to look at the breakdown of net wealth into its different components, namely real assets, financial assets, mortgage debt and non-mortgage debt. As Table 5 shows, the difference in net wealth between banked and unbanked households in the euro area comes mainly from the asset side and in particular from the difference in real asset holdings between the two groups. Of the €74,000 wealth gap between banked and unbanked households in the euro area, €58,000 are attributed to the difference between real assets.

This difference is in line with a gap in home ownership. A separate estimation (not shown here for brevity) that explains the gap in ownership of the household principal residence reveals that unbanked households have a 10 percentage point lower probability of being homeowners than their banked peers in the euro area and a 13 percentage point lower probability in the United States (all results statistically significant at the 1 per cent level). This suggests that the banked households are considerably more likely to accumulate wealth through ownership of their principal residence.

The rest comes mainly from the difference in financial assets. Although unbanked households hold a little less debt, the difference is not significant.

Looking at the specification for the United States that is directly comparable to the one for the euro area, we find that the wealth gap there is also mainly explained by differences in

real assets, with comparable magnitudes, although the gap is wider in the case of the euro area ($43,000 in the United States and €58,000 in the euro area). In the case of the differences in financial wealth, the numbers are practically identical, around $/€16,000. The reason the wealth gap in the United States is smaller than that in the euro area is due to the liability side of households' balance sheets. Whereas there is no substantial gap in debt holdings in the euro area, banked households in the United States are considerably more indebted than the unbanked: their mortgage debt is almost $15,000 higher and their non-mortgage debt is at least $2,000 greater. These results are qualitatively robust to using the extended set of covariates, even if, as before, the magnitudes of the treatment effect are found to be somewhat smaller.

But why are the U.S. unbanked households substantially less indebted than the U.S. banked households, whereas there is no such difference in the euro area? [10] To answer this question, it is useful to examine the matched sample of households more closely. Recall that the matched banked households are by nature similar to the matched unbanked households in many dimensions, e.g., they have lower income, are more likely to be unemployed or not working, and have lower levels of education. In the euro area, 12.9 per cent of the matched banked households have mortgages (compared with 23.0 per cent in the entire population). In the United States, the equivalent number for the matched banked households is a whopping 28.8 per cent (compared with 48.3 per cent in the entire population). This implies that mortgage participation by the low-income group is much more common in the United States, in line with the U.S. subprime lending boom of the early 2000s (see also Christelis, Ehrmann and Georgarakos 2015). It seems that the banked U.S. households managed to benefit from the subprime lending boom, whereas the unbanked U.S. households did not. This generates a substantial gap between the banked and the unbanked, which we pick up in our estimates for the United States. It is not present in the euro area, which did not have a comparable subprime lending boom.

5.2 Robustness

All our results are robust to changes in the parameters of the matching method selected, i.e., the number of neighbors matched and the caliper within which matches are allowed. Table 6 shows results if we match to 1 or 10 neighbors (as opposed to 5), and if we modify the caliper to 0.1 and 0.001 (as opposed to 0.01). For brevity, only results related to the main outcome, e.g., net wealth, are presented. Results are also robust to doing a simple nearest neighbor matching without specifying any caliper and to performing the matching without replacement.

Table 6 here

Row (8) in Table 6 shows results when the estimation does not use population weights. There is not much change for the euro area, but the treatment effect for the United States increases fourfold and becomes statistically insignificant. This arises because the U.S. survey has a strong oversampling of wealthy households; if we have such wealthy

[10] The U.S. data contain some information that can be helpful for understanding how households can have a mortgage when they are unbanked. Some of the unbanked households indicate that they have a mortgage with a mortgage company, the previous home owner, or some membership organization.

households in the matched sample but do not use population weights, these households have an overly large influence on the estimation, thereby distorting the results.

Row (9) of the table reports the results when excluding Greece from the euro area sample. As we discussed in Section 3.1, the number of unbanked households in Greece is extremely high compared with the euro area (26.6 per cent versus 3.6 per cent), such that this country could be driving the results. Apparently, this is not the case: our results hold even when we exclude all Greek households.

Row (10) reports the results when controlling for whether or not the household has inherited its principal residence. Even though this variable could serve as a proxy for initial wealth and/or wealth accumulation outside the banking system, we decided not to include it in the benchmark regressions because it is not available for France. Overall, the results remain unchanged.

For the United States, we have information available on the reasons households do not have a bank account, which allows us to classify unbanked households into two categories: voluntarily excluded and involuntarily excluded.[11] To test whether the nature of the exclusion is important for our results, we run our baseline specification first without households who are voluntarily excluded (row (11)) and second, without those who are involuntarily excluded (row (12)). We do not find the two cases to be much different.

Rows (13) and (14) split the sample into the seven countries with the lowest and the highest shares of unbanked households, respectively. While the effect of being unbanked on net wealth remains in the same order of magnitude, it is estimated to be somewhat larger in countries with a relatively lower number of unbanked households. This is in line with the notion that these countries have fewer workarounds, making it more costly to be unbanked. The differences between our baseline euro area specification and the United States also confirm this pattern. The wealth gap is smaller in the United States, where there is a big informal sector that caters to the needs of the unbanked.

We have also conducted a robustness test related to the choice of the reference person for the household, for which we use the individual characteristics such as employment status, age and education. Our benchmark results are based on what the HFCS calls the "financially knowledgeable person," who is also the main respondent. We also use the same definition as in the SCF, that is, the male in a couple or the older person in a same-sex couple. When we use this individual instead (row (15)), our results are barely changed.

Row (16) provides results for an alternative definition of financial exclusion—rather than focusing on the unbanked, we now examine the effect of credit exclusion. We define households as being excluded from credit if, in the last three years, they (i) applied for credit, were turned down and did not successfully reapply, (ii) applied for credit and were not given as much as they had applied for, or (iii) did not apply for credit as a result of a perceived credit constraint. Results show that the effects on net wealth are somewhat smaller than for our benchmark in the euro area but substantially larger in the United States. These findings reflect the greater importance of credit for U.S. households (75 per cent of

[11] We consider as voluntarily unbanked those who report as a reason for not having a bank account one of the following: they do not like dealing with banks, cheque book has been/could be lost/stolen, have not gotten around to it, someone else writes cheques for them, do not need/want an account or are concerned about overdraft fees. The involuntarily unbanked are those who report as a reason for not having a bank account one of the following: cannot manage/balance a checking account, do not write enough cheques to make it worthwhile, the minimum balance is too high, service charges are too high, no bank has convenient hours or location, not allowed to have account (credit problems, bankruptcy, do not meet depository's qualifications for having an account), or do not have (enough) money.

which have some form of debt, compared with 43 per cent in the euro area), and are suggestive that credit can help households accumulate wealth (most notably through mortgage debt and the corresponding participation in the housing market).

Beyond nominal amounts, we have also compared log net wealth. The results are shown in the last row of Table 6 and indicate that the effect of being unbanked need not be additive in wealth, it could equally be multiplicative.[12]

6. Conclusions

Financial inclusion has become an important topic in the current policy debate. Especially following the global financial crisis, the issue has also gained prominence in advanced economies. Using data for 14 euro area countries and for the United States, this paper has shown that there are important parts of the population in advanced economies that remain unbanked, such as the low-income and the poorly educated households, and households in countries that have less access to financial institutions (as proxied by the density of ATMs in a given country).

Without access to saving and borrowing instruments offered by formal financial institutions, these households are prone to being at a disadvantage economically because they cannot smooth consumption as easily and face more difficulties accumulating wealth. In line with this hypothesis, we find that banked households report substantially higher net wealth than their unbanked counterparts, with a gap of around €74,000 in the euro area and $42,000 in the United States. One reason for this wealth difference is that banked households are considerably more likely to accumulate wealth through ownership of their principal residence.

These results provide support for the notion that financial inclusion is an important issue also in advanced economies, as being unbanked remains a reality for a non-trivial number of households in the euro area as well as the United States, who are put at a considerable economic disadvantage.

[12] Note that for this specification all households with negative or zero net wealth are discarded.

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Table 1: The share of unbanked households

	All (in %)	Income quintile (in %)					Work status of reference person (in %)					Education of reference person (in %)			Observations
		1	2	3	4	5	Employee	Self-Employed	Unemployed	Retired	Other Not Working	Primary or None	Secondary	Tertiary	
Euro Area	3.64	9.37	3.90	2.18	1.57	1.15	2.13	3.06	6.49	4.27	6.97	7.79	3.24	1.41	51,532
Austria	0.63	2.01	0.53	0.35	0.09	0.18	0.21	1.65	0.00	1.08	0.00	0.00	0.75	0.00	2,380
Belgium	2.33	6.54	3.71	0.87	0.00	0.49	1.04	1.76	7.42	1.71	5.56	3.67	2.82	1.52	2,327
Cyprus	18.77	29.15	22.19	17.95	16.89	7.36	16.52	10.66	20.87	25.41	21.03	34.66	19.81	13.46	1,237
France	0.43	1.11	0.52	0.31	0.12	0.09	0.21	0.05	1.08	0.38	2.52	0.91	0.28	0.08	15,006
Germany	0.96	3.17	1.31	0.27	0.00	0.00	0.10	1.06	3.56	1.60	1.87	0.00	1.30	0.33	3,565
Greece	26.57	41.27	31.24	22.98	19.23	17.85	25.44	21.52	39.08	25.86	30.61	33.75	25.54	17.50	2,971
Italy	8.24	27.76	8.46	3.05	1.47	0.44	5.15	4.66	23.12	8.60	18.69	17.08	6.07	1.77	7,951
Luxembourg	2.03	4.71	1.97	2.73	0.68	0.01	2.99	1.11	4.52	0.00	1.51	3.55	2.17	0.41	950
Malta	3.12	11.26	3.52	0.79	0.00	0.00	1.33	0.00	21.78	3.78	4.30	4.34	3.29	0.83	843
Netherlands	5.76	5.57	3.35	6.45	6.22	7.24	6.22	3.06	0.00	4.27	4.86	8.62	5.72	5.48	1,301
Portugal	5.74	16.12	7.18	2.83	1.68	0.88	3.01	2.90	7.78	8.71	10.40	8.38	1.90	0.92	4,404
Slovakia	8.78	23.82	11.34	6.03	1.46	0.66	2.03	0.61	10.50	25.13	9.88	38.02	9.92	4.76	2,057
Slovenia	6.39	18.00	7.82	0.88	4.44	0.66	0.41	3.88	4.41	13.96	0.00	26.75	7.39	0.63	343
Spain	1.86	4.15	1.27	1.68	1.85	0.30	1.21	1.21	3.06	1.69	3.02	3.11	1.87	0.37	6,197
United States	7.54	21.97	9.85	4.34	1.12	0.44	6.41	5.23	20.35	3.86	19.90	22.73	8.34	1.58	6,482

Notes: The table shows the share of unbanked households in the *Household Finance and Consumption Survey* and the *Survey of Consumer Finances*, along with the number of observations in each data set. The breakdown by income quintile is based on total gross household income excluding income from financial assets, where the quintiles are calculated over the distribution in each country separately. All numbers are calculated using population weights.

Table 2: Net wealth and home ownership for banked and unbanked households

	Net wealth				Home ownership (in %)	
	Mean (000 euros/$)		Median (000 euros/$)			
	Banked	Unbanked	Banked	Unbanked	Banked	Unbanked
Euro Area	237.48	71.81	114.61	18.30	60.23	52.32
Austria	265.07	259.89	76.75	43.34	47.79	36.97
Belgium	342.49	126.03	210.64	1.50	70.38	38.85
Cyprus	731.97	221.70	297.97	58.80	79.42	64.79
France	234.33	19.52	116.95	0.83	55.47	9.72
Germany	197.04	2.05	53.00	0.05	44.51	12.62
Greece	165.29	87.83	113.86	58.00	73.98	68.06
Italy	293.90	66.39	190.30	9.50	70.99	43.43
Luxembourg	713.47	450.96	404.50	5.00	67.77	35.28
Malta	374.24	65.23	224.53	32.32	78.68	48.15
Netherlands	170.76	147.39	104.30	45.78	56.55	65.90
Portugal	159.41	41.76	78.80	11.25	72.72	51.10
Slovakia	82.36	51.11	62.93	38.50	89.59	92.96
Slovenia	152.67	87.26	104.45	30.25	82.02	79.11
Spain	294.27	109.18	184.30	96.15	82.79	77.68
United States	533.00	27.70	93.40	1.10	70.90	23.60

Notes: The table shows the mean and median reported net wealth and the share of households that own their principal residence, for banked and unbanked households. All numbers are calculated using population weights.

Table 3: Determinants of being unbanked

	Euro Area		Euro Area		USA	
	AME	*Std. error*	AME	*Std. error*	AME	*Std. error*
Age	0.000 *	*0.000*	0.000 *	*0.000*	0.000 **	0.000
Income quintile 2	-0.030 ***	*0.009*	-0.030 ***	*0.006*	-0.054 ***	0.008
Income quintile 3	-0.047 ***	*0.015*	-0.047 ***	*0.011*	-0.091 ***	0.009
Income quintile 4	-0.060 ***	*0.017*	0.059 ***	*0.013*	0.138 ***	0.014
Income quintile 5	-0.066 ***	*0.019*	-0.066 ***	*0.016*	-0.159 ***	0.018
Self-employed	0.001	*0.008*	-0.001	*0.007*	0.006	0.011
Unemployed	0.013 ***	*0.005*	0.016 ***	*0.004*	0.042 ***	0.011
Retired	-0.008	*0.009*	-0.005	*0.007*	-0.016	0.014
Other not working	0.014 ***	*0.004*	0.011 *	*0.006*	0.170 ***	0.027
College	-0.026 ***	*0.004*	-0.022 ***	*0.005*	-0.090 ***	0.010
Highschool	0.030 ***	*0.007*	0.019 ***	*0.008*	0.043 ***	0.008
Married	-0.010 ***	*0.004*	-0.009 ***	*0.004*	-0.026 **	0.010
Divorced	0.000	*0.006*	0.002	*0.006*	-0.002	0.009
Number of hh members	0.008 ***	*0.002*	0.006 ***	*0.001*	0.001	0.003
Gender	0.006	*0.006*	0.005	*0.006*	-0.022 **	0.009
Race	--	--	--	--	0.051 ***	0.006
Low-fee account	-0.014	*0.011*	--	--	--	--
Government transfers	-0.062 ***	*0.019*	--	--	--	--
ATMs per 1,000 km^2	0.000 *	*0.000*	--	--	--	--
Austria	--	--	-0.010 ***	*0.002*	--	--
Belgium	--	--	0.019 ***	*0.001*	--	--
Cyprus	--	--	0.094 ***	*0.002*	--	--
France	--	--	-0.025 ***	*0.002*	--	--
Greece	--	--	0.109 ***	*0.003*	--	--
Italy	--	--	0.052 ***	*0.002*	--	--
Luxembourg	--	--	0.012 ***	*0.003*	--	--
Malta	--	--	0.015 ***	*0.003*	--	--
Netherlands	--	--	0.050 ***	*0.002*	--	--
Portugal	--	--	0.035 ***	*0.003*	--	--
Slovakia	--	--	0.065 ***	*0.003*	--	--
Slovenia	--	--	0.051 ***	*0.002*	--	--
Spain	--	--	0.003	*0.004*	--	--
Pseudo R-squared	0.202		0.259		0.295	
Observations	49,452		51,532		6,482	

Notes: The table reports results from probit regressions that model whether a household is unbanked, following equations (1) and (2). AME denotes average marginal effects; standard errors are reported in italics. Columns (1) and (2) are based on data for the euro area, with standard errors clustered by country. Column (1) is based on equation (2a), i.e., includes country-specific variables. Column (2) is based on equation (2b), i.e. includes country-fixed effects. Column (3) shows results for the United States and is based on equation (2c). ***/**/* denotes statistical significance at the 1 per cent / 5 per cent/ 10 per cent levels.

Table 4: Outcome of the matching

	Euro Area	USA (1)	USA (2)
Number of unbanked HHs	2,491	463	463
Number of matched unbanked HHs	2,488	449	439
Number of matched banked HHs	7,291	1,133	1,077
Pseudo R^2			
Before matching	0.28	0.32	0.36
After matching	0.00	0.00	0.01
$p > chi^2$			
Before matching	0.00	0.00	0.00
After matching	0.99	1.00	1.00
Median bias (in %)			
Before matching	16.77	36.08	36.94
After matching	1.25	1.69	1.37
Mean bias (in %)			
Before matching	21.21	41.88	38.70
After matching	1.43	2.34	1.89

Notes: This table shows the results of the propensity score matching. Each unbanked household is matched with the five closest banked households, provided that the distance between their propensity scores is smaller than 0.01. The first column shows results for the euro area, the second column for the United States when the control variables are the same as for the euro area (except for ethnicity, which is only available for the United States). The control variables are Age, age^2, income quintile dummies, working status (self-employed, unemployed, retired, other inactive and employed as the excluded category), education (completed secondary education, completed tertiary education, or primary education as benchmark group), marital status (married, divorced, or single as benchmark group), the number of household members, gender (male, or female as benchmark group) and ethnicity for the United States (white, or non-whiteas benchmark group). In the case of the euro area country-fixed affects are also included. For USA (2), we control in addition for the extent to which households shop around when looking for financial investments, whether they make use of specialized software to help them with their financial decisions, whether the household is saving (or has saved) for a future major expense, the ability of the household to get money from friends and relatives in case of an emergency, household's saving habits and the reasons for saving. Pseudo R^2 is the pseudo R^2 from a probit estimation of the treatment status on all the variables in the model. p stands for the corresponding P-value of the likelihood-ratio test of the joint insignificance of all the regressors. The standardized bias statistics are calculated as follows: we calculate the bias for each covariate, i.e., the per cent difference of the sample means in the treated and non-treated (full or matched) sub-samples as a percentage of the square root of the average of the sample variances in the treated and non-treated groups, based on the formulae from Rosenbaum and Rubin (1985). To get a single summary statistic, we subsequently calculate the median/mean of these biases. HHs stands for households.

Table 5: Effect of being unbanked on net wealth and its components

Outcome		Euro Area		USA (1)		USA (2)	
(1)	Net wealth	-74,326.3 ***	*12,456.2*	-41,555.1 ***	*12,088.8*	-25,998.0 ***	*10,418.6*
(2)	*Of which: Real assets*	-58,350.4 ***	*12,900.1*	-42,539.1 ***	11,356.1	-35,922.2 ***	10,398.5
(3)	*Financial assets*	-16,400.3 ***	*3,893.9*	-15,693.9 ***	3,238.7	-8,961.8 ***	3,048.6
(4)	*Mortgage debt*	316.7	*2,425.0*	-14,544.2 ***	2,650.1	-16,799.8 ***	3,157.5
(5)	*Non-mortgage debt*	-741.1	*698.9*	-2,133.7 **	*1,085.1*	-2,086.2 **	*1,092.8*

Notes: This table shows the average treatment effect using the sample of matched households, and using weights as in DuGoff, Schuler and Stuart (2014). The outcome variable is defined in the header of each row. ***/**/* denotes statistical significance at the 1 per cent / 5per cent / 10 per cent levels.

Table 6: Robustness checks—effect of being unbanked on net wealth

		Euro Area		USA (1)		USA (2)	
(1)	Baseline specification (5 neighbours, caliper 0.01)	-74,326.3 ***	*12,456.2*	-41,555.1 ***	*12,088.8*	-25,998.0 **	*10,418.6*
(2)	10 neighbours, caliper 0.01	-74,589.3 ***	*12,565.1*	-44,413.1 ***	*9,742.1*	-27,568.1 ***	*8,210.2*
(3)	1 neighbour, caliper 0.01	-69,660.4 ***	*13,090.2*	-38,290.9	*31,547.5*	-28,605.0 *	*16,316.1*
(4)	10 neighbours, caliper 0.1	-74,206.6 ***	*12,212.8*	-41,653.7 ***	*11,692.0*	-24,089.7 **	*9,661.9*
(5)	10 neighbours, caliper 0.001	-74,633.5 ***	*12,212.8*	-42,043.6 ***	*14,374.8*	-30,455.6 **	*12,892.3*
(6)	1 neighbour, no caliper	-69,623.7 ***	*13,118.0*	-39,697.3	*31,023.2*	-25,022.3 *	*15,061.9*
(7)	1 neighbour, no caliper, without replacement	-74,397.4 ***	*13,695.9*	-37,735.7	*25,413.4*	-24,957.6 **	*12,511.7*
(8)	Unweighted	-82,557.8 ***	*22,950.8*	-229,766.1	*264,620.2*	-182,840.7	*177,315.7*
(9)	Excluding Greece	-84,759.0 ***	*15,529.7*	--	--	--	--
(10)	Additional control: main residence inherited	-75,307.4 ***	*16,869.9*	-37,798.7 ***	*12,236.2*	-29,644.9 ***	*10,745.2*
(11)	Excluding voluntarily unbanked	--	--	-38,888.7 ***	*10,819.5*	-19,030.2 **	*9,868.0*
(12)	Excluding involuntarily unbanked	--	--	-42,261.9 ***	*15,126.5*	-30,874.7 *	*18,609.5*
(13)	Low percentage of unbanked households	-76,690.2 ***	*30,427.3*	--	--	--	--
(14)	High percentage of unbanked households	-63,114.3 ***	*13,076.0*	--	--	--	--
(15)	Alternative definition of reference person	-70,093.2 ***	*10,064.2*	--	--	--	--
(16)	Credit constraint as definition of exclusion	-66,860.4 ***	*12,692.3*	-87,873.7 ***	*19,874.9*	-80,845.5 ***	*22,187.7*
(17)	Log net wealth	-0.778 ***	*0.276*	-0.333 *	*0.172*	-0.168	*0.181*

Notes: This table shows the average treatment effect using the sample of matched households. The dependent variable is net wealth. Row (1) reports the results already shown in Table 5. Rows (2) to (7) report results for different matching algorithms as described in the row headers. Row (8) shows results when no population weights are applied. Row (9) shows results excluding Greece from the euro area sample. Row (10) contains results if the regression controls for whether or not the household has inherited its principal residence. Rows (11) and (12) exclude from the sample households who are voluntarily / involuntarily unbanked. Rows (13) and (14) split the sample into countries with low/high shares of unbanked households. Row (15) provides results with an alternative definition of the household's reference person, and row (16) with an alternative definition of financial inclusion. Row (17) shows results for log net wealth as dependent variable. ***/**/* denotes statistical significance at the 1 per cent / 5 per cent / 10 per cent levels.